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FEBRUARY, 1928

ENTOMOLOGICAL NEWS

Vol. XXXIX No. 2

CHARLES ROBERT OSTEN SACKEN,
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ENTOMOLOGICAL NEWS

VOL. XXXIX FEBRUARY, 1928 No. 2

The Entomology of Sir Thomas Browne's Pseudodoxia Epidemica.

By HARRY B. WEISS, New Brunswick, New Jersey.

When Sir Thomas Browne, scholar and naturalist of the seventeenth century, exploded or attempted to explode popular fallacies in his "Pseudodoxia Epidemica," he did not overlook some entomological ones. He was always interested in animals and plants, and observations on natural history of one sort or another are scattered throughout his works. Hallam[1] did not rate Browne's "Pseudodoxia" at all highly. While admitting that it displayed considerable erudition, he was of the opinion that as late as 1646 only ignorant and unlearned people believed in the phoenix or the basilisk, and said that few required a correction of their false beliefs with such an amount of proof as Browne had supplied. Hallam thought that he occupied his mind with too many trifling questions and said that "A man of so much credulity and such an irregular imagination as Browne was almost sure to believe in witchcraft and all sorts of spiritual agencies." Browne did believe in witchcraft. On March 10, 1664, "Amy Duny and Rose Cullender, two widows of Lowestoft, were indicted for bewitching" some seven persons, and "Sir Thomas Browne, then Dr. Browne, who was present at the trials, being a 'person of great knowledge', was 'desired to give his opinion what he did conceive of them, and he was clearly of opinion that the persons were bewitched . . . . for he conceived that these swooning fits were natural, and nothing else but that they call the mother, but only heightened to a great excess by the subtility of the Devil, co-operating with the malice of these which we term witchs, at whose instance he doth these villainies."[2] Apparently Browne's skepticism did not extend to witchcraft. Nor did it extend to the Ptolemaic theory, because he thought the

[1]Literature of Europe, Vol. IV, 1839, London.
[2]The Geography of Witchcraft, by M. Summers, 1927, New York.

Copernican theory was against Holy Scripture. However, even naturalists are likely to hold peculiar beliefs on some subject or another, and Hallam's estimate seems somewhat too severe, because Browne was an estimable person and had many good qualities.

Returning to his "Pseudodoxia Epidemica," we find him, under the title "Of some Insects, and the properties of several Plants," disposing of the superstition connected with the tapping of the "death-watch" beetle. He says, "For this noise is made by a little sheath-winged gray Insect found often in Wainscot, Benches, and Wood-work, in the Summer. We have taken many thereof, and kept them in thin boxes, wherein I have heard and seen them work and knack with a little *proboscis* or trunk against the side of the box, like *Apicus Martius,* or Woodpecker against a tree. It workest best in warm weather, and for the most part giveth not over under nine or eleven stroaks at a time." He then states that whoever can "extinguish the terrifying apprehensions" caused by the noise of this beetle, will prevent "many cold sweats in Grandmothers and Nurses."

He then takes up the idea that the finding of certain insects one year forecasts famine, war, or pestilence the succeeding year, it having been supposed that the presence in oak apples, of either maggots, flies, or spiders foretold famine, war, or pestilence the next year. He says that flies and maggots are found every year and that the flies are first maggots. He admits that there may be some truth in the "Analogy or Emblematical phansie. For Pestilence is properly signified by the Spider, whereof some kinds are of a very venemous Nature. Famine by maggots, which destroy the fruits of the Earth. And War not improperly by the Fly; if we rest in the phansie of Homer, who compares the valiant *Grecian* unto a Fly;" also that an abundance of flies and maggots in the sap of a tree may indicate its decaying state.

Under the title "Of the Picture of a Grashopper," he corrects the confusion which existed in ordinary minds, between grasshopper and cicada, and writes, "Again, Between the Cicada and that we call a Grashopper, the differences are very many, as may be observed in themselves, or their descriptions

in *Matthiolus, Aldrovandus* and *Muffetus.* For first, They are differently cucullated or capuched upon the head and back, and in the Cicada the eyes are more prominent: The Locusts have *Antennae* or long horns before, with a long falcation or forcipated tail behind; and being ordained for saltation, their hinder legs do far exceed the other. The Locust or our Grashopper hath teeth, the Cicada none at all; nor any mouth according unto *Aristotle*: The Cicada is most upon trees; and lastly, the fritinnitus or proper note thereof, is far more shril than that of the Locust; and its life so short in Summer, that for provision it needs not have recourse unto the providence of the Pismire in Winter." He then corrects other interpretations, Biblical ones, and goes on to say, "It must be likewise understood with some restriction what hath been affirmed by Isidore, and yet delivered by many, that Cicades are bred out of Cuccow spittle or Woodsear; that is that spumous, frothy dew or exudation, or both, found upon Plants, especially about the joints of Lavender and Rosemary, observable with us about the latter end of May. For here the true *Cicada* is not bred, but certain it is that out of this, some kind of Locust doth proceed; for herein may be discovered a little insect of a festucine or pale green, resembling in all parts a Locust, or what we call a Grashopper." He says that owing to the absence of the cicada in England, they have not "fallen upon its proper name." Many years later, however, the cicada was discovered there.

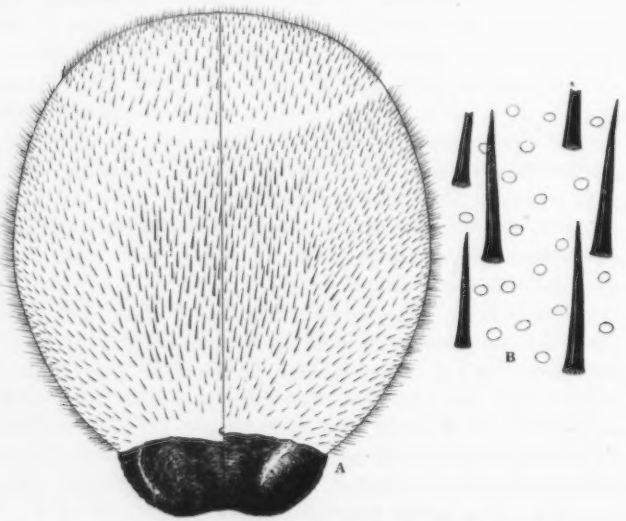
Browne's other entomological subjects include the glowworm, a description of its light, disappearance with its death, etc., the wrong belief that earwigs are wingless, and the humming sounds made by bees, flies, etc., in which he uses the explanations of Aristotle and Scaliger and advances his own views. All these are to be found under the heading, "Compendiously of sundry Tenents concerning other Animals which examined, prove either false or dubious."

In addition to being a good observer, Browne was an assiduous collector, and his house in Norwich was full of medals, books, curios, and natural history specimens. He was curious about everything and he wanted to know the truth.

The Larva of Olfersia vulturis Van der Wulp. (Diptera: Hippoboscidae).

By G. F. Ferris, Stanford University, California.

In September, 1925, the writer obtained at San Blas, Nayarit, Mexico, from a single specimen of the black vulture, *Catharista urubu*, sixteen specimens of a Hippoboscid fly. At least as many more individuals of the fly escaped, so that the total Hippoboscid population of this one bird was at least somewhere between thirty and forty. The species is that described by Van der Wulp as *Olfersia vulturis*. Elsewhere I have joined in an expression of the opinion that *vulturis* is a synonym of *Olfersia spinifera* (Leach), but I am not now so certain that this is the case. I shall not enter into a discussion of the question here and for the present at least I am reverting to the use of the name *vulturis*.



Olfersia vulturis Van der Wulp: A, larva; B, portion of derm of larva.

From these flies there were obtained three newly deposited larvae. Two of these were found in the insect net in which the flies were caught and one was attached—perhaps acci-

dentally—to the feathers of the host. As far as I am aware no larva of any species of this genus has yet been described. These at hand present certain very striking peculiarities that distinguish them from any other Hippoboscid larvae that have so far been described or with which I am familiar.

In its general form the larva of this species is the same as that which is characteristic of the family, its length on the slide about 5 mm. The stigmatic plate is similar to that of such forms as *Ornithoctona nigricans, O. strigilecula, Ornithomyia lagopodis* and *Hippobosca maculata.* The posterior end of the body is capped by a single plate, representing probably a fusion of the usual paired spiracles, this plate being pierced by a number of small, pore-like openings which communicate with trachael trunks. It has been impossible to determine the arrangement of these pores, for the stigmatic plate is so heavily chitinized and deeply pigmented that it is quite opaque in uncleared specimens and attempts to clear it in caustic potash resulted merely in its complete disintegration.

The peculiar feature of the species is the fact that the entire body, excepting only the stigmatic plate and a narrow transverse zone which extends entirely about the body near the cephalic end, is thickly beset with short spines (Fig. B). These are spines, not setae, there being no socket. They vary somewhat in size, being noticeably larger near the center of the body on both dorsal and ventral sides. In addition to these the derm is everywhere marked by small, sub-circular, clear areas. The transverse zone which is free from spines marks the line along which the puparium splits at the time of emergence of the adult.

In all the other species that have been described and that I have seen, the derm of the larva is entirely free from spines or irregularities of any sort.

At the University of California, E. O. Essig, associate professor of entomology and associate entomologist, has been appointed professor of entomology and entomologist at the experiment station. Dr. Edwin C. Van Dyke, associate professor of entomology, has been appointed professor of entomology.—*Science,* Dec. 30, 1927.

A New Species of Meloid Beetle, with a Key to the North American Species of the Genus Leonidia Cockerell.* (Coleop.)

By CLARENCE E. MICKEL, University of Minnesota, St. Paul, Minn.

The following new species of *Leonidia* was reared from the cells of the bee, *Anthophora occidentalis* Cresson, which were collected in the vicinity of Colorado Springs, Colorado, by Mr. G. W. Goldsmith, of the Alpine Laboratory, Manitou, Colorado.

Leonidea anthophorae n. sp.

♂. Piceous; elytra fulvous, at the sides entirely covering the first abdominal segment; length 12 mm.

Head piceous, except the front very dark mahogany red; labial palpi 3-segmented, the maxillary palpi 4-segmented; last segment of the maxillary palpi equal in length to the third (Fig 2, a); mandibles edentate, blunt at the tip; labrum somewhat depressed anteriorly, the anterior margin very slightly and broadly emarginate, moderately punctate throughout, clothed with sparse, erect, black hairs, anteriorly with a fringe of shorter, fuscous hairs; clypeus glabrous and with scattered punctures, the latter slightly larger than those of the labrum, anterior margin of clypeus broadly concave with a small median tooth; suture between the clypeus and the front indistinct; front and vertex glabrous, the interantennal area of the front with scattered, very minute punctures, remainder of front and vertex with sparse, rather large punctures interspersed with very minute punctures like those of the lower part of the front; front and vertex clothed with sparse, erect, black hairs; antennae 10-segmented, the first two segments glabrous, sparsely punctate, the remaining eight segments densely punctulate and pubescent; first segment campanulate, second segment slightly shorter than the first and almost equilateral; third segment longer than either the second or the fourth; fourth to ninth segments almost equal in length but the distal ones narrower and more rectangular; ultimate segment almost twice as long as the penultimate, and acute at the tip (Fig. 2, b).

Prothorax piceous, glabrous, clothed with sparse, erect, black hairs; anterior half sparsely punctate, interspersed with very minute punctures; posterior half very scatteringly punctate; prothorax four-fifths as long as wide, the base margined and

*Published with the approval of the Director as Paper No. 700, of the Journal Series of the Minnesota Agricultural Experiment Station.

somewhat sinuate; scutellum large, prominent, glabrous, punctate and clothed with sparse, erect, black hairs; elytra fulvous, rugose, punctured, clothed with sparse, erect, black hairs, at the sides entirely covering the first abdominal segment.

Abdomen piceous to blackish brown, the hind margins of the segments testaceous; all of the segments subcorneous, the basal sternites somewhat less so medially than elsewhere; abdominal tergites with sparse punctures, and with sparse, erect, black hairs; sternites punctured and pubescent like the tergites, except sternites four to seven inclusive with a narrow, transverse area of dense, erect, black hairs; ultimate sternite biparted on the median line.

Legs piceous, clothed with sparse, erect, black hairs; tibiae with well developed spurs; tarsi slender; tarsal claws with a long, basal bristle.

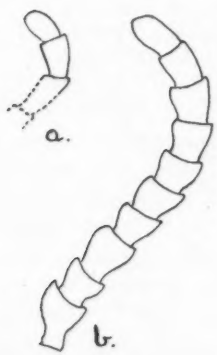


Fig. 1

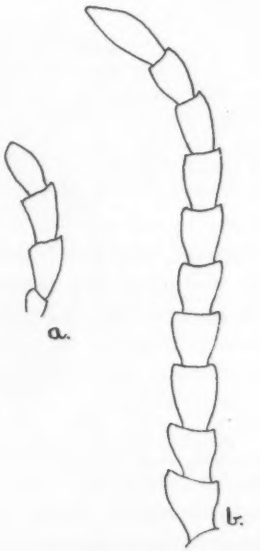


Fig. 2

Fig. 1—*Leonidia neomexicana* Cockerell: a, maxillary palpus; b, antenna. (Original)
Fig. 2—*Leonidia anthophorae* n. sp.: a, maxillary palpus; b, antenna. (Original)

♀. Similar to the male; more ferruginous; antennae of same form but slender, not so robust; abdominal tergites much less corneous, almost membranous; abdominal sternites two to

six inclusive membranous medially, subcorneous laterally; sternites seven and eight entirely subcorneous, the eighth entire, not biparted on the median line.

Holotype: ♂, Colorado Springs, Colorado, emerged from cell of *Anthophora occidentalis* Cresson, June, 1926; in collection of University of Minnesota. *Allotype*: ♀, Colorado Springs, Colorado, emerged from cell of *Anthophora occidentalis* Cresson, June, 1926; in collection of University of Minnesota. *Paratypes*: 7 ♂ and 6 ♀, Colorado Springs, Colorado, emerged from cells of *Anthophora occidentalis* Cresson, June, 1926; in collections of University of Minnesota, American Entomological Society of Philadelphia, and Dr. M. H. Hatch.

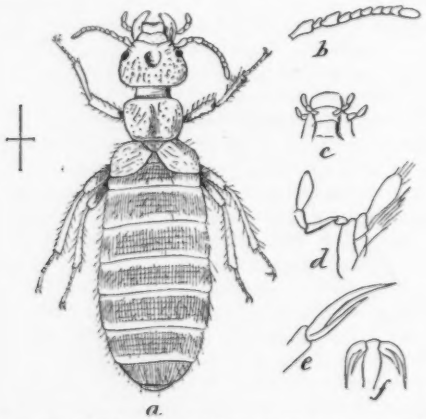


Fig. 3—*Leonidia rileyi* Dugès: a, adult female; b, antenna; c, labium; d, maxilla and palpus; e, tarsal claw from the side; f, tarsal claw from above. (From E. Dugès Insect Life, U. S. Dept. Agr.)

This species is closely related to *L. neomexicana* Ckll. It differs from *neomexicana* principally in the form and the comparative lengths of the ultimate segments of the maxillary palpi and the antennae, as is shown in Fig. 1, a and b (*neomexicana*) and Fig. 2, a and b (*anthophorae*). The figures were made by the author from the type in both cases. *Anthophorae* appears to be the most primitive of the three species of this genus so far known from North America, on

account of the fact that in certain of the paratypes the last segment of the antennae displays remnants of a suture, indicating that at some previous time the antennae have been eleven segmented, the last two segments having fused to form the present ten-segmented antennae.

Key to the Species of Leonidia.

1. Second and third segments of the antennae oblique, with one side produced, Fig. 3, b; last segment of the maxillary palpi almost twice as long as the third segment, Fig. 3, d.....*rileyi* Dugés.
   Second segment of the antennae almost equilateral, with one side scarcely produced, the third segment equilateral; last segment of the maxillary palpi not longer than the third segment .....2.
2. Last segment of the antennae acute at the tip, almost twice as long as the penultimate segment, Fig. 2, b; last segment of the maxillary palpi equal in length to the penultimate segment, Fig. 2, a.....*anthophorae* n. sp.
   Last segment of the antennae rounded at the tip, only slightly longer than the penultimate segment, Fig. 1, b; last segment of the maxillary palpi distinctly shorter than the penultimate segment, Fig. 1, a.....*neomexicana* Ckll.

Specimens of the genus *Leonidia* shrivel and become greatly distorted when pinned in the same manner as other Coleoptera. This is especially true of the abdominal region which is only slightly chitinized. To overcome this distortion the type material of *anthophorae* was prepared in the following manner: The live specimens were dropped in boiling water and removed immediately; they were then dehydrated in alcohols, being allowed to stand 24 hours in 30%, 50%, 75%, 85% and 95% alcohol respectively; they were then transferred to xylol, in which they remained four or five days; the specimens were then pinned in the usual manner. This method produced very good mounts. The hot water treatment, however, results in the segments of the body and appendages remaining distended after mounting, while in specimens pinned in the usual way the segments of the body and appendages contract into one another upon drying. This accounts for the extraordinary length of the antennae in Fig. 2, b, as compared with Fig. 1, b. It was taken into account in the identification of the material.

Scale Insects of Pennsylvania (Homop.: Coccidae).

By F. M. TRIMBLE, Bureau of Plant Industry, Harrisburg, Pa.

The economic importance of the Coccidae or scale insects is recognized by plant growers throughout the world and the interest in this group in the United States has been unusually strong since the introduction of the San Jose scale in California about 1870. This family is represented in the fauna of Pennsylvania by one hundred and twelve species. In 1917 only forty-two species had been recorded in the state, but subsequent explorations by the writer and other members of the Bureau of Plant Industry have revealed seventy other species, three of which were new to science. Although only twelve of the total number are economic pests on out-door plants yet these are sufficiently abundant at times to cause enormous losses if not controlled by artificial means. In greenhouses and conservatories nine species have been recorded as generally injurious.

The peculiarities in form and habitat of this family are not unlike those of many other families of insects and the amateur must closely scrutinize infested plants in order to find many of them.

Those found in Pennsylvania are as follows:

*ICERYA PURCHASI Maskell. Fluted scale. Infests pittospermum and citrus varieties.

MATSUCOCCUS MATSUMURAE Kuwana. A rare species and recorded but once,—imbedded in the cambium of twigs of the past year's growth on pitch pines. Originally described in Japan.

XYLOCOCCUS BETULAE Pergande. Recorded from one locality on black birch and *Alnus incana*. The scales were imbedded in the cambium where the bark was cracked.

*ORTHEZIA INSIGNIS Dougl. Greenhouse orthezia. A common pest of lantana and coleus indoors.

O. SOLIDAGINIS Sanders. Occasionally taken on goldenrod and cinquefoil.

NIPPONORTHEZIA ARDISIAE Kuwana. A rare coccid found in an ant nest near fort Hunter. Originally described in Japan.

NEWSTEADIA AMERICANA Morrison. A rare species described

*Note: Greenhouse species marked by an asterisk.

from material taken by Prof. J. G. Sanders in Pennsylvania on tree roots.

*ASTEROLECANIUM BAMBUSAE Bdvl. Bamboo scale. Common on bamboo in greenhouses.

A. VARIOLOSUM Ratz. Pit-making oak scale. Occasionally injurious to white and English oaks.

A. SP. An unidentified species taken on *Osmodium caroliniana*, *Viola emarginata* and *Fraxinus* sp.

LECANIODIASPIS CELTIDIS Ckll. Taken on horsechestnut and tulip poplar.

L. PRUINOSA Hunter. One record from black locust.

L. TESSELLATA Ckll. Recorded on rhododendron and high-bush huckleberry.

KERMES ANDREI King. Rare on white oaks.

K. ARIZONENSIS King. Recorded but once in Pennsylvania, on white oak.

K. GALLIFORMIS Riley. Occasionally taken on red oak.

K. KINGII Ckll. Occasionally taken on red oak.

K. PETTITI Ehrh. Common on black oak.

K. PUBESCENS Bogue. Common on mossy-cup oak in southeastern Pennsylvania.

GOSSYPARIA SPURIA Modeer. European elm scale, a common pest of all varieties of elms in Pennsylvania.

*ERIOCOCCUS AZALEAE Comst. Azalea bark louse. A common pest of azaleas and hybrid rhododendrons in greenhouses.

E. KEMPTONI Parr. Rare on *Ammophila breviligulata*, taken on Presque Isle in Lake Erie.

E. QUERCUS Comst. Oak eriococcus. Rare on bear oak.

PHENACOCCUS ACERICOLA King. Wooly maple-leaf scale. A common pest of sugar maples.

P. SERRATUS Ferris. A rare species taken on beech.

P. sp. An unidentified species found dwarfing ragweed.

TRIONYMUS sp. An undescribed species taken under a stone associated with ants.

*PSEUDOCOCCUS ADONIDUM Linn. Long-tailed mealy bug. A common pest of many greenhouse plants.

*P. CITRI Risso. Short-tailed or citris mealy bug. Occasionally found on various greenhouse plants.

P. COMSTOCKI Kuwana. Recorded from *Catalpa bungei* and *Buxus sempervirens*.

P. MARITIMUS Ehrh. A common mealy bug on many out door plants.

*P. NIPAE Maskell. Kentia mealy bug. A common pest of kentia palms.

RIPERSIA MINIMA T. and K. On grass roots in ants' nest.

R. BLANCHARDII K. and C. On grass roots in ants' nest.

PULVINARIA ACERICOLA Walsh and Riley. Cottony maple-leaf scale. Injurious to silver maples.

*P. FLOCCIFERA Westwood. A rare greenhouse species taken on *Dilffenbachia.* sp.

P. VITIS Linn. Cottony maple scale. Common on grape, maple and sycamore.

PSEUDOPHILIPPIA QUAINTANCII Ckll. Cottony pine scale. A rare species taken on *Pinus rigida* and *Pinus virginiana.*

ERIOPELTIS FESTUCAE Fonsc. Cottony grass scale. A rare species taken on orchard grass in eastern Pennsylvania.

*EUCALYMNATUS TESSELLATUS Sign. Tessellated scale. A common pest of palms and many other greenhouse plants.

*COCCUS ELONGATUS Sign. The elongate scale. A rather common pest of rubber plants in greenhouses.

*C. HESPERIDUM Linn. Soft brown scale. A common greenhouse pest.

*C. PSEUDOHESPERIDUM Ckll. Occasionally taken on orchids.

TOUMEYELLA LIRIODENDRI Gmel. Tulip tree soft scale. A common pest of tulip trees and ornamental magnolias.

T. PINI King. Occasionally found on pitch pines. Honeydew excreted by this species is rich in the rare sugar melizotose.

LECANIUM CARYAE Fitch. Brown elm scale. Common on elms and hickory.

L. CORNI Bouche. European fruit scale. A widely disseminated scale of little importance in Pennsylvania.

L. CORNUPARVUM Thro. Magnolia soft scale. A scarce insect recorded chiefly on cucumber trees.

L. CORYLI Linn. A rare Lecanium taken on *Pyracantha;* previously imported from France.

L. FLETCHERI Ckll. A common scale taken on arborvitae and junipers.

L. NIGROFASCIATUM Perg. Terrapin scale. A bad pest of peach and plum trees in eastern and central Pennsylvania.

L. PERSICAE Fab. European peach scale. Taken on imported barberry.

L. PRUNASTRI Fonsc. Globular scale. A new pest of peach and plum in Central Pennsylvania.

L. QUERCIFEX Fitch. Oak lecanium. A common scale taken on white oak.

*SAISSETIA HEMISPHAERICA Targ. Hemispherical scale. A common greenhouse pest on ferns and various other plants.

*S. NIGRA Nietn. Black scale. An occasional pest of rubber plants and ferns.

*S. OLEAE Bernard. Olive scale. Occasionally taken on ferns and palms.

PHYSOKERMES PICEAE Schrank. Spruce bud scale. Common on white, red and Norway spruces. The spruce Christmas trees shipped into Pennsylvania have often been found to be heavily infested with this pest.

CHIONASPIS AMERICANA Johns. Elm scurfy scale. A pest of American elms.

C. CARYAE Cooley. A rare scale taken on black walnut.

C. CORNI Cooley. Common on *Cornus amomum*.

C. EUONYMI Comst. Euonymus scale. A serious pest of euonymus.

C. FURFURA Fitch. Scurfy scale. A pest of apple trees.

C. LINTNERI Comst. Lintner's scale. A common pest on *Cornus amomum*.

C. ORTHOLOBIS Comst. Cottonwood scurfy scale. A common pest of cottonwoods in northern Pennsylvania.

C. PINIFOLIAE Fitch. Pine-leaf scale. A pest of all pines and occasionally spruces.

C. SALICIS Linn. An imported species introduced on lilac and *Tilia* sp.

C. SALICIS-NIGRAE Walsh. Willow scurfy scale. A common scale on willows in western Pennsylvania.

C. SYLVATICA Sanders. Gum scurfy scale. Common scale on sour gum.

*HOWARDIA BICLAVIS Comst. Mining scale. Scarce on *Tamarindus indacus* in conservatories.

*DIASPIS BOISDUVALLI Sign. Boisduvall's scale. A common pest on many greenhouse plants.

*D. BROMELIAE Kerner. Pineapple apple. Taken on Bromeliaceae in greenhouses.

D. CARUELI Targ. Juniper scale. A common pest of junipers.

*D. ECHINOCACTI Bouche. Cactus scale. Recorded on many greenhouse cacti.

AULACASPIS ROSAE Bouche. Rose scale. A common pest of roses and all bramble berries.

*HEMICHIONASPIS ASPIDISTRAE Sign. Aspidistra scale. Common on aspidistra and ferns.

*PINNASPIS BUXI Bouche. An occasional pest of dracaenas.

LEUCASPIS JAPONICA Ckll. Maple bark scale. Found in Pennsylvania on sugar maple and Japanese maples.

L. BAMBUSAE Kuw. Taken on bamboo in a conservatory.

*FIORINIA FIORINIAE Targ. European fiorinia. Often injurious to camellias and gardenias.

*F. THEAE Green. Tea scale. A common pest of the commercial tea.

ASPIDIOTUS ABIETIS Schrank. Hemlock scale. Common on hemlock.

A. ANCYLUS Putnam. Putnam's scale. A common scale with a long list of host plants.

*A. BRITTANICUS Newst. Laural scale. Occasionally found on bay trees and imported boxwood.

A. COMSTOCKI Johns. Often taken on the twigs and leaves of sugar maple.

*A. CYANOPHYLLI Sign. Recorded from pandanas in greenhouses.

A. FORBESI John. Cherry scale. Common on cherry trees.

*A. HEDERAE Vall. Ivy scale. A common pest of greenhouse plants.

A. JUGLANS-REGIAE Comst. English walnut scale. Often recorded on walnut.

*A. LATANIAE Sign. Latania scale. A common pest of latania, *Areca lutescens* and coconut palms.

A. OSBORNI Newell and Ckll. Common on chestnut trees.

A. OSTREAEFORMIS curt. European fruit trees scale. Recorded on plum trees.

A. PERNICIOSUS Comst. San Jose scale. The most pernicious of all scale insects recorded in Pennsylvania.

*A. RAPAX Comst. Greedy scale. A common pest in greenhouse plants.

A. TOWNSENDII Ckll. A rather rare species on the twigs and leaves of ornamental magnolias.

A. ULMI John. Elm aspidiotus. Often taken on elms.

A. UVAE Comst. Grape scale. Often abundant on grape and sycamore.

CRYPTOPHYLLASPIS LIQUIDAMBARIS Kot. Sweet gum gall scale. Common on sweet gum in southeastern Pennsylvania.

*PSEUDAONIDIA PAEONIAE Ckll. Frequently taken on greenhouse azaleas.

*CHRYSOMPHALUS AONIDUM Linn. Circular scale. A common pest of dracaenas and rubber plants.

*C. AURANTII Mask. Red scale. Occasionally taken on greenhouse plants.

*C. DICTYOSPERMI Morgan. Morgan's scale. A widely disseminated greenhouse pest.

C. OBSCURUS Comst. Obscure scale. Rather common on red oaks and English oaks.

*GYMNASPIS ACHMEAE Newst. Common on *Bromelia* and *Bilbergia* varieties.

*LEPIDOSAPHES BECKII Newm. Purple scale. Common on camellia, citrus, etc.

*L. CAMELLIAE Hoke. Camellia scale. Common on camellia.

*L. GLOVERII Pack. Glover's scale. Scarce on citrus varieties.

*L. PINNAEFORMIS Bouche. On citrus varieties recently imported from France.

L. ULMI Linn. Oyster shell scale. A pernicious pest of ornamental shrubbery and trees.

*ISCHNASPIS LONGIROSTRIS Sign. Thread scale. Common on palms and camellia.

*PARLATORIA PERGANDII Comst. Chaff scale. Common on citrus trees and ivy.

*P. PROTEUS Curt. Recorded from crotons.

Notes on the Cercopidae of America North of Mexico (Homoptera).

By E. D. BALL, Sanford, Florida.

In a recent article the writer summarized the present knowledge of the genus *Clastoptera* for the region north of Mexico. A few interesting notes with reference to the remainder of the family follow.

Monecphora bicineta Say. The writer found the nymphs of this species down in the bottoms of grass clumps in damp situations around Washington, D. C. Places where seepage was appearing on side hills with south slopes appeared to be favorite spots. In Florida this species occurs in grass clumps in damp areas and forms large frothy masses often partly below the level of the ground.

This insect differs widely from the representatives of other Cercopid genera in this country in the manner of leaving the froth mass. All the other species observed leave in the nymphal state, climb up a stem or branch, fix their claws securely in the bark and remain stationary, allowing their skin to dry. The nymphal skin splits down the back and the insect crawls out leaving the dry skin, in almost its original shape,

clinging to the stem. This is usually done in the early morning, in order to give the wings time to fully expand before the heat of the day hardens them. Not so with the *Monecphora* nymph—when ready to emerge it crawls up out of its damp retreat among the stems and roots, selects an open but usually partly shaded situation on the under side of a grass blade and forms a single large sphere of froth. This sphere is made up of a lower solid mass of bubbles and an upper hollow hemisphere formed of a single layer of almost uniform sized and relatively transparent bubbles. On the lower solid mass the nymph comes to rest, partly dries its skin, then splits it down the back from end to end and spreads it out like a rug on the floor. Standing on this raft, and sheltered by the glittering dome of bubbles above, it spreads out its wings and dries them at leisure. This usually occupies the morning and when it finally leaves its frothy bower it leaps free, spreads its wings and is away like a flash.

Aphrophora saratogensis Fh. The writer has taken the adults of *saratogensis* and *parallela* in abundance on pine in Wisconsin, Massachusetts and Virginia but has never found any nymphs on pine except those of the latter species. In Florida, *saratogensis* is abundant but *parallela* has not been taken so careful watch was kept for froth masses on pine but without success. One day in sweeping an area where luxuriant clumps of the common ditch fern (*Woodwardia virginica*) were growing near scattered clumps of pines a number of large froth masses were found on the ferns and from them were taken nymphs that later developed into *A. saratogensis* adults. From that time on froth masses were found on ferns in many places but none on pines. The writer had long suspected that *parallela* was the only one of our species of *Aphrophora* that fed on pine in the nymphal stage. Both *saratogensis* and *signoreti* are much more closely related to the western forms, in which the known nymphs are found feeding on vegetation below the pines, than they are to *parallela.*

Aphrophora signoreti Fh. This species is rare in collections and has only been reported from Ontario, N. Y., and

North Carolina. It is very likely restricted by its nymphal food plant to an Appalachian and northern habitat and when that is found its distribution will be explained and the numbers in collections increased.

Stearns evidently confused this species with *annulata* Ball as he reports having examples of *annulata* from N. H. and N. C. These were no doubt *signoreti* as he does not record examining examples of *signoreti* nor give drawings of its genitalia. *A. annulata* Ball is a western form known at present from Colo., Utah and California and all of these examples were taken in the higher mountains. The male plates are broad and flat at the base with the outer margins parallel or slightly widening to just before the black tips, the inner margins cut out obliquely, and the whole structure clothed with long hairs. In *signoreti* the male plates are much less divergent longer and narrower, almost finger like, without hairs. Stearn's drawing of the plates of *annulata* as a very broad crescent is not typical of either species.

PHILARONIA Ball.

Van Duzee in his Catalog lists *bilineata* (Say) as the logotype of the genus *Philaronia* but gives no authority. Lallemand in 1912 designated *P. abjecta* as the type.

Stearns states that he has examined specimens of *P. abjecta* from North Carolina but these were probably examples of *Lepyronia angulifera* which is abundant in this region and has frequently been determined as *abjecta*.

P. bilineata var. *infuscata* Stearns (Hemp. Conn. p. 230-1923)=var. *orbicularis* Ball, Proc. Ia. Ac. Sc. 25, p. 145-1919 which Stearns omitted.

P. bilineata var. *pallidus* Stearns p. 230 is so near the type form as to be scarcely worth considering as a variety. If this form is recognized at all Stearns' name will fall before var. *americana* Bak. (Can. Ent. p. 112 1897) shown by a Baker type in the writer's possession. Baker described *americana* as "resembling in color *P. lineatus*" while Stearns uses exactly the same words "color pale yellow"; to describe var. *pallidus* and *P. lineatus*. There does not however seem to be any valid reason for maintaining a varietal name.

The Invalidity of the Tentamen Names of the Butterflies (Lepid.: Rhopalocera).

By W. J. Holland, Carnegie Museum, Pittsburgh, Pennsylvania

Mr. Wm. T. M. Forbes published in *Science*, October 28, 1927, pp. 396-397, an article anent the names used in Hübner's *Tentamen*. He endeavors to reply to my article published in *Science* on July 1, 1927. Because of Opinion 97 of the International Commission on Scientific Nomenclature all the *Tentamen* names become unavailable as generic terms attributable to Hübner under date of 1806. *Cela va sans dire*. It is evident that if these names are to be recognized as having generic standing, it must be because they have been used in a generic sense subsequently to the issue of the *Tentamen*. Mr. Forbes claims that they were so used by Hübner himself from 1806-1816. I take issue with him. I say that they were *not* so used by Hübner, Mr. Forbes to the contrary notwithstanding. Mr. Forbes evidently does not grasp Hübner's "system," or is wilfully perverting it. He and those who hold and have held with him, including my good friend of bygone years, the late Dr. Samuel H. Scudder, have imported into their construction of Hübner's terms concepts derived from modern usage, apparently without heeding the warnings of Hübner himself. Having studied the works of Hübner page by page and being familiar with all of them, I think it is beyond doubt, as most authors have held, that Hübner consistently employed in all of his earlier writings a *trinomial* nomenclature, in which he entirely ignored generic terms both in his *own* and in the *modern sense* of the term. It is in defiance of Hübner himself that generic value has been attributed by Scudder and a few recent students to the category of names, which Hübner designated as *Stirpes* (Stämme).

As my article published in *Science* may not be easily accessible to some of the readers of the present paper, I here again give the outline of Hübner's System of Classification:

Order LEPIDOPTERA

a. *Phalanges* (*Germanice* Horden; *Anglice* hordes)=SUB-ORDERS, in modern parlance.

b. He divided the *Phalanges,* or Hordes, into *Tribus* (*Germanice* Rotten; *Anglice* tribes)=SUPER-FAMILIES.

c. He subdivided the *Tribus* into *Stirpes* (*Germanice* Stämme; *Anglice* races, or clans)=FAMILIES, as now used.

d. He subdivided the *Stirpes* or races, into *Familiæ* (*Germanice* Familien; *Anglice* families)=SUB-FAMILIES, as now used.

e. He subdivided the Families into *Coitus* (*Germanice* Vereine; *Anglice* unions)=GENERA in the Linnæan sense.

f. He subdivided the *Coitus* into *Genera* (*Germanice* Gattungen. *Anglice* kinds, or species)=SPECIES in the Linnæan sense, and as now employed.

In my article Mr. Forbes charges me with some sins of omission. Purposely, for the sake of brevity, I omitted alluding to a number of things, to which Mr. Forbes calls attention. I was merely *stating* the law; I was not *construing* it in its application to particular cases. Mr. Forbes takes up the particular case of the word *Limnas.* He evidently is somewhat mystified and puzzled as to the status of that particular word. He flounders, and finally asks the question: "What would Dr. Holland do about it?"

So far as the names of the butterflies in the *Tentamen* are concerned the reply I make to Mr. Forbes follows hereinafter.

As I fully explained in my article published July 1, 1927, Hübner in his *Tentamen* was not writing about *genera,* but, as he explicitly states, about *stirpes* (*families* in the modern sense). As I pointed out, he wrote after the name of each *Stirps* (family), which he provisionally suggested in the *Tentamen,* the name of a familiar species (Gattung) with which all of his readers might be supposed to be well acquainted, in order to show them what kind of a butterfly might be included in the STIRPS. He *absolutely was not using the words in a generic sense,* although a reader, familiar with our modern use of terms in combination, might jump to such a

conclusion, as has actually been done by some, including Dr. Scudder, Mr. Forbes, and Messrs. Barnes and Benjamin. That what I say of Hübner's employment of terms in the *Tentamen* is positively true is proved by all the subsequent writings of Hübner, in which, until he came to publish Vol. II of the *Sammlung exotischer Schmetterlinge,* he always had in mind, or used, a *trinomial form of nomenclature.* In the legends of his plates, *Sammlung exotischer Schmetterlinge,* Vol. I, pls. 1-213, the legends are all trinomial: giving 1st, the name of *Stirps* (*family* in the modern sense); 2nd, the name of the *familia* (Hübnerian); 3rd, the name of the *genus* (Gattung, or *species* in our modern understanding of the term). We must always remember that Hübner used the word *genus* for what we today call *species.* In the *Systematisch-Alphabetisches Verzeichniss,* published in 1822 (?), which is, as Hübner states in the Introduction, the Index to his *Sammlung europäischer Schmetterlinge,* he consistently uses *trinomial* terms, although the plates in that work only carried the names of the species (Gattungen), and were in fact uninomial. In the *Anzeiger* (undated), but which cannot have been published earlier than 1827, probably later, he furnishes a catalog of *all* of his published species, which are listed in the *Verzeichniss bekannter Schmettlinge* (*sic*). In this catalog, which accounts for the species published both in the *Sammlung europäischer Schmetterlinge,* and the *Sammlung exotischer Schmetterlinge,* and which may be justly regarded as "the final layout" of his "system," the points I brought out in my article of July 1, 1927, are made as clear as the sun.

Evidently Mr. Forbes does not understand and has not thoroughly acquainted himself with the writings of Hübner. In fact he confesses in his article that one of them he has not seen, and queries its existence in America. There are copies of this work in America, one of which lies before me as I write, thanks to the kindness of its amiable possessor, Professor H. T. Fernald of Amherst, Mass., whose honored father was one of the leading students of the Hübnerian literature in his day. There is another in the library of the

Academy of Natural Sciences in Philadelphia, which I have recently consulted. It is a rare book.

The butterflies in the *Tentamen* and throughout the writings of Hübner were divided by him into two *tribus* (Rotten): the "nymphales"; and the "gentiles." In the *Tentamen* he suggests the subdivision of these *Tribus* into *Stirpes*. He says so in positive terms. The names of the *Stirpes* (*families* in the modern sense) of the first Tribe he consistently used in his later writings; the *stirps*-names proposed for the second Tribe he used in the trinomial legends of Vol. I of his *Sammlung exotischer Schmetterlinge*, but subsequently simply ignored them, and substituted other *stirps*-names, when he came to publish the index to his *Sammlung europäischer Schmetterlinge* and subsequently, as I shall show later in this article.

"TRIBUS I, nymphales"*

"Stirps I, NEREIDES—Nereis Polymnia"

The word *Nereis* is employed by Hübner in the *Tentamen* and elsewhere as the name of a *Stirps* (Stamm) of butterflies. It is so used in the titles of Pls. 1-17 in the *Sammlung exotischer Schmetterlinge*, it occurs in the *Verzeichniss bekannter Schmettlinge*, pp. 8-14, as the equivalent, as Hübner himself states, of the *Heliconii* of Linné and Fabricius. It is cited in his *Anzeiger*, 1827, p. 2, in the category of *Stirpes* and nowhere else. Under the *Nereides* Hübner assembled the following genera: *Hymenitis, Ithomia, Oleria, Thyridia, Aeria, Ceratinia, Sais, Dismorpha, Mechanitis, Eucides, Melinæa, Migonitis, Sunias, Apostrophia, Sicyonia,* and *Ajantis*. The name *Nereis*, which never was used by Hübner in a generic sense (*Cf. Anzeiger*, p. 2) under any construction of terms cannot be used as a generic name in the Lepidoptera, because it is preoccupied in the *Vermes* (Linnæus, 1791). That is that!

"Stirps II, LIMNADES—Limnas Chrysippus"

Limnas, suggested by Hübner in the *Tentamen* as the name of a *Stirps* (Stamm) was so employed by him in Vol. I of the *Sammlung exotischer Schmetterlinge*, Pls. 18-33. On these plates are represented fifteen species, belonging to two

*The headings in quotation-marks are transcribed from the *Tentamen*.

families (in modern parlance), the *Danaidæ* and the *Riodinidæ*, and nine genera. The use of *Limnas* as a generic name must be attributed to Boisduval, who, knowing that Hübner had not used the word in a generic sense, employed it in 1836 (*Spec.* Gén. I, pl. 20, fig. 1) for a genus of *Riodinidæ* (*Erycinidæ*), as he had a perfect right to do. He designated the genotype as *pixe*, a well known and common Central American species. Blanchard four years later used the word in the same sense as Boisduval, but wrote it with a variant spelling "*Lymnas*." The word so spelled should be designated as a synonym of *Limnas* Boisd. (Kirby, Stichel, and Seitz to the contrary nothwithstanding.) The generic use of *Limnas* for any species of the *Danaidæ* is without warrant, though several reputable authors have made this error.

"Stirps III, LEMONIADES—Lemonias Maturna"

Lemonias, proposed by Hübner in the *Tentamen* as the name for a *Stirps* (Stamm), was subsequently employed by him as such in the titles of plates and in the *Verzeichniss*, p. 26; and the *Anzeiger*, p. 2. It was never used by Hübner as a generic term (*me judice*). The *Lemoniades* of Hübner (*Cf. Verzeichniss l. c.*) include a heterogeneous assemblage of genera: *Stalachtis* (*Riodinidæ*[1]) *Actinote* and *Telchinia* (*Acræidæ*), *Melitæa*, *Schœnis*, *Byblia*, and *Cinclidia*[2] (*Nymphalidæ*). The first employment of *Lemonias* as a generic name among the diurnal lepidoptera was by Hoffmansegg (Wiedemann's Zoöl. Magazin, I, ii, 1818, pp. 99-100). But, as has been shown by Stichel, (Genera Insectorum, fasc. CXII, p. 377) *Lemonias* Hoffmansegg (1818), falls before *Nymphidium* Fabr. (1807) and the word, with all its derivatives, drops into the synonymy. The use of *Lemonias* as a generic name in substitution for *Melitæa*, by Barnes and Benjamin in the "List of the Butterflies of Boreal America," is incorrect, and founded upon a misunderstanding of the status of the term, which, though long used in the *Riodinidæ* (*Erycinidæ*), has been so used without warrant, as is clearly indicated by Stichel (*l. c.*).

[1]Misspelt "*Rhiodinidæ*" in Barnes & McDunnough's Check-List, p. 13
[2]*Cinclidia* Hübner is synonymous with *Melitæa* Fabr.

"Stirps IV. DRYADES—Dryas Paphia"

Dryas is suggested by Hübner in the *Tentamen* as the name of a *Stirps*, and as such is used by him subsequently, but was never employed by him in a generic sense (See his writings *passim*: *Sammlung exot. Schmett.*, Vol. I, 1806-1819; *Systemat.-Alph. Verzeichniss*, 1822; *Verzeichniss bekannter Schmettlinge*, 1816-1827, p. 29; and the *Anzeiger* 1827 (?), p. 2). It has no standing whatever as a generic term, and its use as such by several authors (*e. g.* Tutt) and by Barnes and Benjamin in their recent "List of the Butterflies of Boreal America," is in error. The *Dryades*, composing Stirps IV of Hübner, according to him include the genera *Phyciodes, Brenthis, Argynnis, Issoria, Acidalia, Dione, Colœnis*, and *Argyronome*. (*Cf.* Hübner's *Verzeichniss*, p. 29, *et seq.; Anzeiger*, p. 2.)

"Stirps V. HAMADRYADES—Hamadryas lo"

Hamadryas suggested by Hübner in his circular letter, known as the *Tentamen*, as the name of a *Stirps* (Stamm), was not used by him as a generic name (*Cf. Syst. Alph. Verz.*, pp. 2-6 *et seq.; Verz. Bek. Schmett.*, p. 32; *Anzeiger*, p. 2). The genera, which he included under the *Hamadryades*, are *Vanessa, Pyrameis, Precis, Anartia, Temenis, Junonia, Alcyoneis, Apatura, Historis, Athena, Polygonia, Eugonia, Inachis, Elymnias*, and *Araschnia*. As expert systematists know, the genera assembled under this category are somewhat incongruous, but superficially they resemble each other. *Hamadryas* as a generic name must be credited to Boisduval, 1832, who applied the name in a generic sense to *Papilio zoilus* Fabr., which is the genotype. The insect is found in the Austral-Asian region. (*Cf.* Voyage de l'Astrolabe, Lepidoptera, p. 91; Doubleday & Hewitson, Gen. Diurn. Lep., 1847, pl. 18*, fig. 1; Kirby, Syn. Cat. Lep., 1871, p. 18.) The name *Hamadryas* cannot be used as a generic name for any North American insect.

The word *Hamadryas* has been used as a generic name in the *Ophidia*, the *Mammalia*, and the *Mollusca* by authors writing since Boisduval (1832). In these three cases it is *nomen preoccupatum*.

"Stirps VI, NAJADES—Najas Populi"

Najas, proposed and used by Hübner as the name of a *Stirps* (Stamm) was never used by him as a generic term. The many genera included by Hübner under the *Najades* are mostly tropical American, African, and Asiatic *Nymphalidæ,* of which only *Ageronia, Hypolimnas,* and *Callicore* have been listed as occurring within the United States. Its generic use in the lepidoptera attributable to Hübner (1806) is incorrect; it is, however, apparently preoccupied in the *Mollusca,* Lamarck, 1809.

"Stirps VII, POTAMIDES—Potamis Iris"

Potamis is used by Hübner to designate a *stirps* (*Potamides*), including a large number of genera belonging in our accepted modern classification to the *Nymphalidæ,* the *Morphidæ, Brassolidæ,* &c. It was never used in his category of *coitus* (genera, in our accepted sense of the latter term). Such use is inadmissible, if Hübner is to be the reputed author of the genus.

"Stirps VIII, OREADES—Oreas Proserpina"

The *Oreades* of Hübner are arranged by him in eight families including a long list of genera, mainly referable to the *Satyridæ.* The use of the word in a generic sense is impossible, with Hübner cited as author.

The *Stirps*-names for butterflies, suggested by Hübner under his "Tribus II gentiles," appear in the *trinomial* legends of the plates in Vol. I of the *Sammlung exotischer Schmetterlinge,* as everybody knows, but they are there consistently used as *Stirps*-names, not as generic designations. The use of *Rusticus, Princeps, Mancipium, Consul,* and *Urbanus* as *Stirps*-names was subsequently abandoned by Hübner. In his *Systematisch-Alphabetisches Verzeichniss* (1822) he makes the following substitutions:

For	*Rusticus*	he substitutes	*Agrodiætus;*	Stirps	*Agrodiæti;*
"	*Princeps*	" "	*Archon;*	"	*Archontes;*
"	*Mancipium*	" "	*Anthropodum;*	"	*Anthropoda;*
"	*Consul*	" "	*Hypatus;*	"	*Hypati;*
"	*Urbanus*	" "	*Astycus;*	"	*Astyci.*

The *Systematisch-Alphabetisches Verzeichniss* was in fact the index to his *Sammlung europäischer Schmetterlinge*. In 1822 he threw the names of the *Stirpes* used in the first volume of his *Sammlung exotischer Schmetterlinge* into the discard. Hübner regarded all of his work prior to the issue of the *Verzeichniss bekannter Schmettlinge* as more or less tentative. He brings this out clearly in his Introduction to the *Systematisch-Alphabetisches Verzeichniss* (1822), in which he says at the outset: "The great number of specimens of species (Gattungsmuster) of European lepidoptera in my collection, which I have figured during the last thirty years, have long called for an index of the names, which I have provisionally (einstweilen) given them, until such time as they can be *definitely named* (unfehlbar genannt) &c." He was a searcher for truth. He had, however, a "System," which upon the whole he preferred to any other, and it was not until he began to publish his *Verzeichniss bekannter Schmetterlinge* (1816-1827) and the plates of Vol. II of his *Sammlung exotischer Schmetterlinge,* that he finally fell into line with other systematists, and adopted the binomial nomenclature.

In the *Verzeichniss bekannter Schmettlinge* (1816-1827), which is an attempt to catalog *all* of the species, of which he had published figures, and is the "final layout" of his "system," he introduces an additional "*Stirps*" between the *Hypati* and the *Astyci,* calling it the *Telchines,* into which he puts such different genera as *Curetis* (*Lycænid*) and *Castnia!*

The *Anzeiger,* which cannot certainly have appeared earlier than 1827, completely ignores all the stirps-names given in the *Tentamen* in Tribus II. The title is "*Anzeiger/der im Verzeichniss bekannter Schmettlinge/angenommenen Benennungen ihrer Horden, Rotten/Stämme, Familien, Vereine, und Gattungen.*" Freely translated the title is: "Index of the Names adopted for the Lepidoptera in the *Verzeichniss bekannter Schmettlinge,* giving their *Phalanges* (Horden) *Tribus* (Rotten) *Stirpes* (Stämme), *Familiæ* (Familien) *coitus* (Vereine) and *genera* (Gattungen)".

A study of the *Anzeiger* makes sun-clear what Hübner

had in mind. He never used the word "Stirps" to designate a genus (*coitus*). The names *Rusticus, Princeps, Mancipium, Consul* and *Urbanus* appear nowhere in his alphabetical list of the *Stirpes* given on pp. 1-2. They do not occur in his alphabetical list of the *Coitus Papilionum* pp. 4-7.

Urbanus suggested by Hübner in the *Tentamen* as the name of a *Stirps* and used as such in some of the plates in Vol. I of the *Sammlung exotischer Schmetterlinge,* in all his later writings was totally ignored, and never used to designate anything, *stirps, familia, coitus* (Verein), or *species* (Gattung). (*Cf. Systematisch-Alphabetisches Verzeichniss,* 1822; *Verzeichniss bekannter Schmettlinge,* 1816-1827; and *Anzeiger,* 1827.) Its resuscitation as a generic name by Barnes and Benjamin, following S. H. Scudder, is unwarranted. The species *malvæ,* placed under *Urbanus* by Hübner in the *Tentamen,* as a suggestion of what might be included in the family (*Stirps*), belongs according to Hübner (*Verzeichniss bek. Schmett.,* p. 110) to the genus *Carcharodus. Urbanus* as a generic name in the diurnal lepidoptera has no standing whatever, and its use is due to a misconception.

At the conclusion of his critique Mr. Forbes says: "In bringing in the 'Verzeichniss' Dr. Holland does not mention that ten years [1806-1816] had intervened, and that in the meantime Hübner had used all the Tentamen names of butterflies as generic (as the first names of binomials), also many of the moths. This fact completely invalidates his argument." Wondering upon what Mr. Forbes could possibly have founded his sweeping statement, I wrote to him for information. He kindly informs me (to my utter astonishment) that it is based upon the legends of the plates in the first volume of the *Sammlung exotischer Schmetterlinge.* But everyone of these plates carries a *trinomial* (not a binomial) legend. On these plates Hübner gives 1st, the name of the *Stirps;* 2nd, the name of the *Familia;* 3rd, the name of the *Gattung* (species). It is absolutely *not true* that Hübner used "all the *Tentamen* names" as "the first names of binomials" on these plates. He does not use one of them "as generic," in *our* sense, or in *his*

sense, of that word. It is pure sophistry to try to make two out of three. Mr. Forbes is wrong. He might as well tell us that $2 + 2 = 5$. Inasmuch as his premise is not correct, his conclusion is equally incorrect. Incidentally I may say that I was not making an "argument" in a matter, which in my judgment does not admit of argument. In what I wrote I was stating the plain facts. Mr. Forbes and those who hold with him make the mistake of reading into the writings of Jacob Hübner what he palpably never intended. The use of Hübner's *stirps*-names as the designation of genera, attributable to Hübner, is as amusing a procedure as it would be if a paleontologist were to undertake today to rechristen *Diplodocus carnegiei*, and call it *Dinosaurus carnegiei*, because the ordinal name *Dinosauria* Owen (1842) has priority in time over the genus *Diplodocus* Marsh (1878).

As to the case of the term *Apatela* (*sic*) *to which Mr.* Forbes calls attention, and which he apparently regards as most puzzling, which indeed it is, if the *Stirps*-names of Hübner are to be taken as *generic*, which they are not, an easy solution of the difficulty is to be found. *Apatele* Hübner was a *Stirps* under which Hübner classified a number of genera (*coitus*). He did not employ the word in a generic sense. The first use as generic of the word *Apatela* must be attributed to Harris (1841) type *americana* Harris. But *Apatela* (not *Apatele* Hübner) falls as a synonym before *Acronicta* Ochsenheimer. The solution of the apparent difficulty is quite easy.

All of the foregoing has no interest for politicians, bankers, and coal-dealers; but it is of importance to systematists engaged in naming and classifying the butterflies and moths of the world.

Fourth International Congress of Entomology.

Dr. Karl Jordan, Permanent Secretary of the Congresses, wrote from Tring, Dec. 21, 1927: "The preparations for the Ithaca Congress are proceeding favorably. The number of European members will be sufficiently large to make the gathering an international one, and I think we shall all enjoy the meeting and enlarge our views."

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., FEBRUARY, 1928.

Entomology at the "Convocation Week" Meetings, December 26 to 31, 1927.

We present herewith our annual summary of the papers treating of insects, as listed on the general program of the eighty-fourth meeting of the American Association for the Advancement of Science and of the Associated Societies, held at Nashville Tennessee. Although not all of those enumerated were delivered, the titles give an idea of the topics occupying the entomological workers at this time. These papers were presented before the following societies:

Entomological Society of America	31
American Association of Economic Entomologists	111
American Society of Zoologists alone	8
Same, Joint Genetics Section	5
Same, with Ecological Society of America	1
Same, with American Society of Parasitologists	1
Ecological Society of America alone	2
American Society of Parasitologists alone	7
American Phytopathological Society	3
American Society of Naturalists	1
Section O, Agriculture, with Amer. Assn. Econ. Ent.	4
Potato Association of America	1
American Nature Study Society	3
Total	178

On the basis of the comparisons made in the NEWS for February, 1927, page 55, this total exceeds those of the meetings of the last five years.

The subjects treated in these 179 papers were as follows:

Teaching Entomology	2	Genetics	6
Cytology	1	Parasites of Insects	5
Anatomy	6	Arthropods Affecting Man and Animals	9
Physiology	21	Evolution	2
Ecology	10	Taxonomy	5
Geographical Distribution	1	General Economic Entomology	8
Ontogeny	2		

General Entomology	3	Symphyla	1
Insecticides	29	Apterygota	2
Apiculture	11	Orthoptera	4
Insects Affecting Cereal, Forage and Field Crops (including Cotton 6)	28	Isoptera	1
		Odonata	1
		Homoptera	15
Do. Truck Crops	6	Heteroptera	4
Do. Greenhouse Plants	6	Coleoptera (excl. Japanese beetle and boll weevil)	9
Do. Fruit	28	Japanese beetle	7
Do. Household and Stored Products	8	Boll weevil	5
Do. Forest and Shade Trees	6	Hymenoptera (excl. *Apis*)	7
Insects Carrying Plant Disease Germs	4	Lepidoptera (excl. codling moth and corn borer)	4
		Codling moth	11
		Corn borer	11
ii		Diptera (excl. *Drosophila*)	12
		Drosophila	5
Myriopoda	3	Acarina	5
Pauropoda	1		

Many of these figures are duplicated both between sections i and ii and also within each section.

The Entomological Society of America met December 27 and 28, Dr. F. E. Lutz, American Museum of Natural History, New York, *President;* Prof. J. J. Davis, Purdue University, Lafayette, Indiana, *Secretary.* The announced annual public address was: "Insects, the People and the State," by Prof. H. T. Fernald, Massachusetts Agricultural College, Amherst. A symposium on the Physiology of Insects was held.

The American Association of Economic Entomologists met December 27-31, Prof. R. W. Harned, Agricultural and Mechanic College, Mississippi, *President;* C. W. Collins, Melrose Highlands, Massachusetts, *Secretary.* The entomologists' dinner was held Wednesday evening, December 28, at the Hermitage Hotel.

Dr. L. O. Howard wrote: "We had an excellent entomological meeting at Nashville. Both the Association of Economic Entomologists and the Entomological Society of America's sessions were well attended and excellently handled. I think there must have been at least 250 entomologists there."

Personals

An item in *Nature* for November 26, 1927, states that Dr. R. J. Tillyard has been appointed Chief Entomologist to the Commonwealth of Australia. A letter from Dr. Tillyard to the Editor of the NEWS states that he will leave his present position at The Cawthron Institute of Scientific Research, at Nelson, New Zealand, on March 1. He will organize a Central Entomological Research Station at Canberra, the new capital of Australia, with outlying stations in various States.

Prof. Henry A. Ballou, professor of entomology and head of the section of entomology and zoology in the Imperial College of Tropical Agriculture, Trinidad, has been appointed by the British government to the newly established office of commissioner of agriculture for the British West Indies. He will retain his connection with the college, but will be occupied largely in an attempt to coordinate the scientific and practical work of the institution and the departments of agriculture of the various islands.—*Science*, Dec. 23, 1927.

Concerning Earwigs (Dermaptera)

In ENTOMOLOGICAL NEWS, (Vol. 38, pp. 272-273) Mr. B. B. Fulton takes exception to four points relating to the actions and habits of *Forficula auricularia* as stated by me in an article published in Vol. 36, pp. 234-238, of this journal. In this article I stated the results of a series of experiments and observations covering a period of eight months. During these experiments the earwigs did not eat either leaves or flowers placed in jars in which they were confined. Shortly after that article went to press I found by further experiments that they do eat vegetation but prefer animal matter, such as small insects, larvae, pupae and insect eggs. When testing them with vegetation during these experiments the jars contained fresh soil which was changed frequently, and they must have found food preferable to leaves and flowers.

As to Mr. Fulton's other criticisms I take issue and can see no reason for accepting his corrections. As to the use of the forceps, I was dealing with *Forficula auricularia* and have the best of reasons in believing that some of the earwigs in the southern states differ entirely in the use of their forceps.

MILTON T. GOE, Portland, Oregon.

Entomological Literature

COMPILED, WITH THE ASSISTANCE OF "BIOLOGICAL ABSTRACTS," UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—Baker, C. F.—Obituary. [12] 20: 748-754, ill. **Berlese, A.**—Obituary. [27] 59: 124. **Boldori, L.**—Per una stretta collaborazione fra naturalisti e speleologi. [27] 59: 122-124. **Bradley, J. C.**—The use of the term allotype. [68] 66: 543. **Breuning, S.**—Ueber Fragen der modernen Systematik, mit Beispielen aus der Gruppe der Carabini. [26] 7: 234-236. **Illingworth, J. F.**—Insects attracted to carrion in Southern California. [37] 6. 397-400. **Prell, H.**—On a hibernating cage for insects. [12] 20: 830-834, ill. **Seitz, A.**—Itatiaya. [17] 44: 29-21, 33-35, cont. **Stichel, W.**—Das Zeichnen von Mikro-Objekten. [45] 22: 211-212. **Stiles, C. W.**—Amendments to the International Rules of Zoological Nomenclature. [68] 77: 17-18. **Strickland, E. H.**—Can birds hold injurious insects in check? [76] Jan. 1928: 48-56. **Tillyard, R. J.**—Method of Fossilisation of an Insect Wing. [31] 120: 802-803, ill. **Townsend, C. H.**—What constitutes synonymy? [4] 59: 175-176. **Tunkl, F. F.**—Ueber die Brutpflege der Insekten. [26] 7: 222. **Washburn, F. L.**—Obituary. [12] 20: 849-850.

ANATOMY, PHYSIOLOGY, ETC.—Beier, M.—Vergleichende untersuchungen über das centralnervensystem der Coleopterenlarven [94] 130: 174-250, ill. **Hazelhoff, E. H.**—Regeling der ademhaling bij insecten en spinnen. [Drukkerij J. van Boekhoven. Utrecht. 127 pp.]. **James, H. C.**—On the pair of so-called sensory pits of the ninth abdominal segment of the wireworm (Agriotes obscurus)

with additional notes on the internal anatomy. [35] 14: 470-481, ill. **Lee, M. O.**—A note on the mechanism of respiration in the Orthoptera. [42] 49: 319-320. **Mueller, K.**—Beiträge zur Biologie, Anatomie, Histologie und inneren Metamorphose der Thripslarven. [94] 130: 251-303, ill. **Perret-Maisonneuve, M.**—Secretion et utilisation de la cire chez l'abeille (Apis mellifica). [69] 185: 1317-1319. **Plavilstshikov, N. N.**—Ueber die sogenannten "homologen Reihen der Variabilitat" und den morphomatischen Parallelismus bei Insekten. [45] 22: 225-242. **Portier et Duval.**—Concentration moléculaire et teneur en chlore du sang de quelques insectes. [77] 97: 1605-1606. **Przibram, H.**—Diskontinuitat des wachstums als eine ursache diskontinuierlicher variation bei Forficula. [87] 112: 142-148. **Rostand, J.**—Retard de la fécondation chez Liparis dispar. [25] 1927: 225. **Spencer, W. P.**—Five autosomal mutants in Drosophila hydei. [85] 13: 45-49. **Swingle, M. C.**—The alimentary tract of the common bumblebee. [43] 27: 219-231, ill. **Toumanoff, K.**—Deux cas de gynandromorphisme biparti chez Dixippus morosus. [77] 97: 1388-1390.

THE SMALLER ORDERS OF INSECTA.—*Folsom, J. W.—Insects of the subclass Apterygota from Central America and the West Indies. (S) [50] 72, Art. 6, 16 pp., ill. ***Hood, J. D.**—New western Thysanoptera. [95] 40: 197-204. **Van Dyke, E. C.**—Kalotermes minor (Hagen). [55] 4: 95.

ORTHOPTERA.—Giglio-Tos, E.—Das Tierreich. 50 Lief. Orthoptera. Mantidae. 707 pp.

HEMIPTERA.—*Doane and Steinweden.—A new Ripersia attacking wheat. [55] 4: 85-86, ill. ***Hungerford, H. B.**—A Palmacorixa from Mexico (Corixidae). [55] 4: 94-95. **Hutchison, W. L.**—Note on occurrence of Fitchia aptera Stal (Reduviidae). [19] 22: 70. ***Knight, H. H.**—Descriptions of seven new species of the genus Orthotylus Fieber (Miridae). [4] 59: 176-181. ***Knowlton, G. F.**—A few capitophorus species of Utah with descriptions of two new species (Aphididae). [4] 59: 235-238, ill. **Raff, J. W.**—Hatching process of cicada. [Vict. Nat., Melbourne] 44: 200-204, ill.

LEPIDOPTERA.—*Barnes and Benjamin.—A new Cossid from New Mexico (Cossidae). [55] 4: 67. **Barnes and Benjamin.**—Synonymic notes (Arctiidae). [55] 4: 87-89. **Blackmore, E. H.**—Check-List of the Macrolepidoptera of Br. Columbia. [Prov. Mus. N. H.

Br. Col.] 1927: 5-47. **Campbell, R. E.**—The celery leaftyer, Phlyctaenia rubigalis Guen., in California. [55] 4: 77-84. **Draudt, M.**—Seitz Macrol. of the World Fauna Am. Part 191. Vol. 6, p. 565 begins Lasiocampidae. ***Dyar, H. G.**—New species of American Lepidoptera of the families Limacodidae and Dalceridae. [91] 17: 544-551. **Hayward, K. J.**—Miscellaneous notes from Argentina. [21] 39: 157-159. ***McDunnough, J.**—The lepidoptera of the Seton Lake region, British Columbia. [4] 59: 193-199, ill., cont. ***McDunnough, J.**—The Lepidoptera of the Seton Lake Region, British Columbia. [4] 59: 239-246. ***Provancher et Huard.**—Faune entomologique de la province de Québec. Nos papillons. (Argynnis atrocostalis n. sp.). [98] 54: 129-143, ill. **Röher, A.**—Ueber Strahlung brünstiger Schmetterlinge. [80] 1: 163-164. **Seitz, A.**—Das System der Schmetterlinge. 111. Die Danaiden. [17] 44: 39-40, cont.

DIPTERA.—Alexander, C. P.—The interpretation of the radial field of the wing in the nematocerous diptera, with special reference to the Tipulidae. [Proc. Linn. Soc. N. S. Wales] 52: 42-72, ill. ***Alexander, C. P.**—New nearctic crane-flies (Tipulidae). [4] 59: 184-193. **Dampf, A.**—Notas entomologicas. La Trioza del aguacate (S) [Bol. Of. Para Defensa Agr. Mex.] 1: 436-437, ill. **Dyar, H. G.**—American Psychodidae-I. [10] 29: 162-164, ill. ***Enderlein, G.**—Dipterologische Studien. (S) [60] 88: 102-109. ***Ferris, G. F.**—Some American Hippoboscidae (Pupipara). [4] 59: 246-251, ill. **Herms, W. B.**—Tabanids breeding in rice fields. [55] 4: 91-92. **Johannsen, O. A.**—Macropeza and its Allies. (Chironomidae). (S) [49] 16: 423-425.

COLEOPTERA.—*Barber, H. S.—A supposedly new Baridiid weevil from Peruvian sugarcane. (S) [10] 29: 149-150, ill. ***Boving, A. G.**—Immature stages of Eumycterus (?) saccharidis Barber, with comments on the classification of the tribe Barini (Curculionidae). [10] 29: 151-158, ill. ***Blaisdell, F. E.**—Studies in the Melyridae No. 6. [55] 4: 49-53. ***Brisley, H. R.**—A short review of the tribe Orsodacnini and Criocerini of the Coleopterous family Chrysomelidae with special reference to species of Western United States. [55] Pan-Pacific Ent. 4: 54-60. **Buchanan, L. L.**—Synonymical notes on several otiorhynchid weevils. [4] 59: 183-184. ***Chapin, E. A.**—Notes on North American Tillinae with description of a new Cymatodera (Cleridae). [95] 40: 143-146. **Hardy and Preece.**—Additional notes on some Cerambycidae from

Vancouver Island, B. C. [55] 4: 61-67. **Hervey, G. E. R.**—A European nitidulid, Brachypterolus pulicarius L. (Nitidulidae). [12] 20: 809-814, ill. **Lapouge, G.**—de. Tribu des Carabini. [Miscel. Ent.] 30: 45-48. **Leng and Mutchler.**—Supplement 1919 to 1924 (inclusive) to Catalogue of the Coleoptera of America, North of Mexico. pp. 1-78. John D. Sherman, Jr., Mt. Vernon, N. Y. 1927. ***Martin, J. O.**—A new Helmis (Helmidae) from the northwest. [55] 4: 68. ***Northrop, S. A.**—Beetles from the fox hills cretaceous strata of South Dakota. [16] 15: 28-38, ill. ***Pic, M.**—Contribution a l'etude du genre Probaenia Weise. (Hispidae) (S) [25] 1927: 245-247. **Schleicher, H.**—Ueber punktulierte Hister-Arten (Hist.) [26] 7: 171-173. **Strouthal, H.**—Die Larven der palaearktischen Coccinellini und Psylloborini. [52] 1926, A. 3: 1-63, ill. ***Van Dyke, C.**—A new species of Micrixys (Carabidae). [55] (S) 4: 93. **Voss, E.**—Die Unterfamilien Attelabinae und Apoderinae. (Curc.) (18, Beitrag zur Kenntnis der Curculioniden.) [60] 87: 1-88, ill. **Warwick, B.**—Illustrations for two interesting beetles from Carlsbad cavern. [55] 4: 90. ***Wendeler, H.**—Ein neues subgenus und eine neue species des genus Paederus. Neue exotische Staphyliniden. (S) [Neue Beitr. System. Ins.] 4: 1-2, ill.; 2-9. ***Wolcott, A. B.**—A review of the Cleridae of Costa Rica. [Col. Contr.] No. 1: 1-103.

HYMENOPTERA.—***Friese, H.**—Die Nachtbienen-Gattung Megalopta Sm. (S) [60] 87: 111-135, ill. ***Garlick, W. G.**—Two new sawflies of the genus Arge. [4] 59: 182-183. **Palenitschko, Z. G.**—Zur vergleichenden variabilität der arten und kasten bei den ameisen. [46] 9: 410-438, ill. **Scullen, H. A.**—Bees belonging to the family Bremidae taken in western Oregon, with notes. [55] 4: 69-76, cont. ***Walley, G.**—New species of Sagaritis with a key to the genus. (Ichneumonidae) [4] 59: 227-234, ill.

SPECIAL NOTICES

Perhaps the two most recently published summaries of the embryonic and the postembryonic development of insects are those by Prof. Jan Hirschler, of the University of Lemberg, and Dr. Anton Handlirsch, of Vienna, respectively. Both are parts of Schröder's *Handbuch der Entomologie*. The former constitutes Chapter X, pages 570-824, of Vol. I, and appeared in two instalments, viz.: in the 13th and 14th (1924) and 27th and 28th (1927) Lieferungen. Although Prof. Hirschler says that the "noch immer bewegte Zeiten" have prevented him from

reading many works in the original and possibly from seeing some of the newer publications, one can hardly excuse him from omitting such a careful piece of work as Nelson's *Embryology of the Honey Bee* of 1915. Dr. Handlirsch's Chapter 12, pages 1117-1184 of Vol. I, came out in Lieferung 33 (1927), and contains many suggestive statements of views which he has expressed in earlier papers.

THE LIFE OF THE WHITE ANT by MAURICE MAETERLINCK. Translated from the French by Alfred Sutro. 231 pp., Dodd Mead and Co., New York, 1927.

A short review of *La Vie des Termites* appeared in the June, 1927, issue of the *Journal of Economic Entomology*. This work is now generally available, by the present translation. Following are the chapter headings: The Termitary, The Problem of Nutrition, The Workers, The Soldiers, The Royal Pair, The Swarming, The Devastations, The Occult Power, The Morality of the Termitary, Their Destiny, Instinct and Intelligence. A brief bibliography follows.

This work will no doubt popularize the termites, as did the author's *The Life of The Bee*, but as Phillips states, it seems that Maeterlinck was less familiar with the termitary than he was with the hive. The Life of the White Ant is written in the same style as his work on the honeybee, charged with the same philosophy, such as this; " . . . the scheme of nature does not include happiness." He contrasts the "happiness" and "freedom" of the hive with the imprisonment and sordid surroundings of the termite nest numerous times. His evolutionary ideas are quite interesting, they give us much to think about. Much of the biological information is the same, but he has distorted, or at least, overstated his problem.

Maeterlinck speaks time after time of the intellect of the termite, making countless comparisons with *Homo*, yet in the closing chapter supports Fabre's conviction that insects probably do not possess a true intelligence. His ideas on the adaptability or plasticity of the termites, and of insects in general might be questioned. He apparently considers termites, ants and other arthropods as readily adaptable to certain situations. Several debatable statements occur, for instance; "In the hive we find working bees, eggs, males and a queen, the last merely a worker whose reproductive organs have been considerably developed."

It is quite significant to note that the name of T. E. Snyder does not appear in either text or bibliography. He has probably done more to disseminate knowledge in regard to termites than any other worker in America. Neither does the name of Nathan Banks or Alfred Emerson appear, though

Cleveland's comparatively recent work with the intestinal Protozoa is discussed in detail.

The book is without doubt very worth-while. It is extremely interesting, and will do much towards a wider dissemination of information on insects. It is much better than most of the recent popular accounts. Books written for the general reading public must necessarily be over-stated to attain their point. DeKruif's *Microbe Hunters* is a fine parallel case. Entomologists who frown upon attempts to simplify and popularize insects delay the progress of the science, which in a large measure accounts for the bizarre notions many people hold of entomologists.

PAUL KNIGHT, University of Maryland.

OBITUARY.

With the passing of the Rev. A. H. MANEE, of Southern Pines, North Carolina has lost its leading amateur entomologist. He died December 26, 1927, in his cottage on the hillside in the midst of nature that he loved so well. Born in New York City, March 30, 1858, he had spent the last 23 years in Southern Pines. He preached for many Baptist churches in the North and upon coming to North Carolina filled a summer pastorate in Southern Pines.

Mr. Manee was a skillful collector of insects in the Sandhills section of North Carolina. He was responsible for many unique and valuable insect records, some of which are listed in his six papers published in the ENTOMOLOGICAL NEWS from 1908 to 1924. All but one of these papers were devoted to Coleoptera. He was responsible for finding about 100 new species in this limited sandhill section, doing all of his collecting withing a radius of five miles of his home. The records of the insect list of North Carolina show that the species he collected and found to be new were, Wasps 14, Carabidae 21, Coccinellidae 11, Cerambycidae 13, other Coleoptera 12, Diptera 1, Caddis flies 1. He described four new species.

North Carolina entomologists will miss the almost boyish joy he showed when they came to look over his collection and talk about insects. The long leaf pines, scrub oaks, wild flowers and nesting birds near his cottage will miss a devoted friend. R. W. LEIBY.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—Coleoptera. I wish to purchase correctly named Coleoptera, from North America and Canada. Please send lists. Edwin E. Calder, R. I. College of Pharmacy, 235 Benefit St., Providence, R. I.

Exchange—Columbian butterflies by 100 monthly arrivals, also N. A. pupae and cocoons. Mrs. Emma Kessler, 499 Manhattan Ave., New York.

Will exchange and buy butterflies and beetles.—Eugene Denby, 2128 Pensacola Ave., Chicago, Ill.

Wanted—For cash or exchange—Entomological News, Vols. 8, 9, 10, each complete, and Vol. 11, No. 5; Psyche, Vol. 11, Nos. 1, 3, 4; Vol. 13, Nos. 2, 3, 4; Vol. 14, No. 6; Vol. 16, Nos. 1, 5, 6. Many good items for exchange.—J. E. Hallinen, Cooperton, Okla.

For Exchange—Lepidoptera of Georgia for those from other states and countries. Send lists to A. G. Richards, Jr., 498 Prince Ave., Athens, Ga.

Cash for Back Issue—Wanted December issue, Vol. 2, 1891, Ent. News. Name your price; or will buy complete Vol. 2. Mr. J. D. Gunder, 849 Linda Vista Ave., Pasadena, Calif.

Wanted—Living cocoons of American Silk Moths: Luna, Cecropia Polyphemus, etc. Offered: Morphos, etc., in exchange or cash. Send particulars before sending.—A. Ford, 42, Irving Road, Bournemouth, Hampshire, England.

For Exchange—A large number of living cocoons of Actias selene, Philosamia cynthia, etc., in winter. Send for list.—Vee Kung Yu, c/o Bureau of Entomology, Kashing, Chekiang Province, China.

Wanted—Specimens of the genus **Pepsis** (Tarantula hawks) for a revision of the genus. Will name and return. H. T. Fernald, Amherst, Mass.

For Exchange—South American and Celebes butterflies by 100 monthly arrivals, also South and North American pupae and cocoons. Mrs. Emma Kessler, 499 Manhattan Ave., New York.

Exchange—Northern Idaho Lepidoptera to exchange for exotics or other showy specimens. C. W. Herr, Priest River, Idaho.

Canarian Fauna—For all particulars apply to H. E. Appenhagen, Sta Cruz, Teneriffe, Apartado No. 202.

I am revising the genus *Ceuthophilus* (Orthoptera, Tettigoniidae, Rhaphidophorinae), and will be glad to have material from any part of the country for study and determination. Specimens will be promptly returned.—Theodore H. Hubbell, Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

Lepidoptera from all parts of the world in exchange for rarer Sphingidae, Saturnidae and Bombycidae from the Southern States and Mexico. Send lists of desiderata to Henry Wormsbacher, 1357 St. Charles Ave., Lakewood, Ohio.

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